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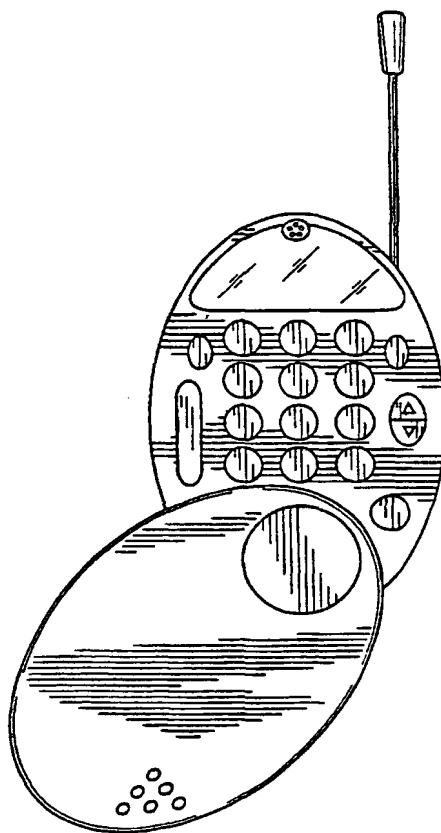
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: COMPACT PORTABLE HANDHELD TELEPHONE



(57) Abstract: A compact portable handheld telephone comprises a first casing, a second casing and a pivoting assembly. The first casing has a first horizontal plane extending therethrough. The second casing has a second horizontal plane extending therethrough. The first horizontal plane extends parallel to the second horizontal plane. The pivoting assembly permits the pivoting of the second casing with respect to the first casing. The pivoting assembly pivots the second casing about an axis that is perpendicular to the first horizontal plane and the second horizontal plane. The first horizontal plane includes a first axis therein and the second horizontal plane includes a second axis therein. The first axis and the second axis are parallel when the first and second casing are in the closed position.

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COMPACT PORTABLE HANDHELD TELEPHONE

FIELD OF INVENTION

The present invention relates to a compact portable telephone, and more particularly to a pivoting casing assembly for a compact portable telephone that permits multiple orientations during use.

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BACKGROUND OF THE INVENTION

The ultimate object of communication is, of course, to transmit, or exchange, thought or information from anywhere to, or with, anyone, anytime, immediately. In addition to conventional communications between two fixed points, mobile communications are being progressively developed. The mobile communications are those held by mobile bodies (including human beings) 10 such as ships, motor vehicles, airplanes, etc. with the general subscription telephone system, offices, etc. and those between mobile bodies. Lately, portable telephones and cordless telephones as kinds of mobile communications are being extensively developed.

Reduction in size is an important factor for promoting practical use of the portable telephone. On one hand, reduction in size of the portable telephone has become easier because parts small in 15 size and low in cost are made available with progress in the technology for fabricating related devices, but on the other hand, requirement for consideration of human engineering on account of the fact that the telephone must be used with the receiver held to the human ear seems to be preventing the reduction in size. Under these circumstances, there are demands for achieving the reduction in size of the portable telephone while paying due regard to human engineering.

20 Telephone sets in general are used with the receiving portion held to the ear and the transmitting portion held toward the mouth. Even with the portable telephone, the receiving portion and transmitting portion must be kept a sufficient distance apart and therefore the portable telephone itself has had to be shaped in a somewhat elongated form.

The conventional portable telephone has involved a problem that it does not permit multiple 25 orientations such that it can be easily used in either the left hand or right hand of the user while positioning the transmitting portion adjacent the mouth of the user and the receiving portion adjacent the ear of the user.

OBJECTS OF THE INVENTION

It is an object of the present invention to provide a compact portable handheld telephone.

It is another object of the present invention to provide a handheld telephone having a receiver assembly with a plurality of operating positions.

5 It is another object of the present invention to provide a handheld telephone having a receiver assembly that swivels about an axis between operating positions.

It is another object of the present invention to provide a handheld telephone that permits one-handed operation.

It is another object of the present invention to provide a handheld telephone having a right
10 handed operating position.

It is another object of the present invention to provide a handheld telephone having a left handed operating position.

It is another object of the present invention to provide a handheld telephone having a spring biased pivoting assembly for moving the receiver to an operating position.

15 SUMMARY OF THE INVENTION

The present invention is directed to a compact portable handheld telephone. The telephone according to a preferred embodiment of the present invention includes a first casing, a second casing and a pivoting assembly. The first casing has a first horizontal plane extending there through. The second casing has a second horizontal plane extending there through. The first horizontal plane

20 extends parallel to the second horizontal plane. The pivoting assembly in accordance with the present invention permits the pivoting of the second casing with respect to the first casing. The pivoting assembly when activated biases the first casing with respect to the second casing for automatic one-hand opening of the handheld telephone. The pivoting assembly may be activated once to open the handheld telephone to a position for use by a right-handed user. The pivoting

25 assembly may be operated a second time to open the handheld telephone to a position for use by a left-handed user. The pivoting assembly is preferably a spring activated push button assembly. The pivoting assembly pivots the second casing about an axis that is perpendicular to the first horizontal plane and the second horizontal plane. The first horizontal plane includes a first axis therein and the second horizontal plane includes a second axis therein. The first axis and the second axis are

30 substantially parallel when the first and second casing are in the closed position. The second axis is disposed at an angle to the first axis when in the at least one open position.

In accordance with the present invention, the first casing may include a receiving portion. The first casing may further receive therein an operating assembly for transmitting and receiving telephone signals. The second casing may include a transmitting portion. The pivoting assembly is capable of pivoting between a closed position and at least one open position. The second casing substantially overlies the first casing in the closed position. The second casing may be pivoted away from the first casing in the at least one open position. A battery pack is releasably secured to the backside of the first casing.

The compact portable telephone in accordance with the present invention may further include a locking assembly for releasably locking the first and second casing in at least one of the closed position and the at least one open position. The locking assembly may be incorporated into the pivoting assembly.

The present invention is also directed to a compact portable telephone including a first casing, a receiving portion located in the first casing, and an operating assembly for transmitting and receiving telephone signals. The operating assembly may be located with the first casing. The receiving portion broadcasts telephone signals received by the operating assembly. The compact portable telephone further includes a second casing connected to the first casing. The second casing may swivel about an axis with respect to the first casing. The second casing is capable of swiveling about the axis between a closed position and at least one open position. The second casing substantially overlies the first casing in the closed position. The second casing is pivoted away from the first casing in the at least one open position.

A transmitting portion may be located in the second casing. The transmitting portion is capable of receiving audio signals from a user. The transmitting portion is capable of transferring the audio signals to the control assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in conjunction with the following drawings in which like reference numerals designate like elements and wherein:

Fig. 1 is a right, front perspective view of a portable telephone according to an embodiment of the present invention in a closed position;

Fig. 2 is a front plan view of the portable telephone of Fig. 1;

Fig. 3 is a rear plan view of the portable telephone of Fig. 1;

Fig. 4 is a left side plan view of the portable telephone of Fig. 1;

Fig. 5 is a right side plan view of the portable telephone of Fig. 1;

Fig. 6 is a top plan view of the portable telephone of Fig. 1 in a closed position;

Fig. 7 is a bottom plan view of the portable telephone of Fig. 1 in a closed position;

Fig. 8 is a front plan view of the portable telephone of Fig. 1 in a right oriented open
5 operating position; and

Fig. 9 is a front plan view of a portable telephone of Fig. 1 in a left oriented open operating
position.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made in detail to a compact handheld portable telephone according
10 to the present invention illustrated in Figs. 1-9. The portable telephone 1 includes a first or main
casing 10, a second casing 20 and a battery pack 30. The first casing 10 includes a display screen
11 and a plurality of operating control pads 12. The display 11 and operating controls 12 are
connected to electronic controls (not shown) located within the first casing 10. The first casing 10
includes an antenna device 13. The antenna device 13 is retractable. When the telephone 1 is
15 operational or "ON", the antenna device 13 is in an extended position, as shown in Fig. 8. When the
telephone 1 is not operational or "OFF", the antenna device 13 may be retracted to produce a
compact storage unit. The display 11, the plurality of operating control pads 12, antenna device 13
and the electronic controls collectively form an operating assembly which is capable of transmitting
and receiving audio and electronic signals. The first casing 10 further includes a receiver portion
20 14.

A battery pack 30 is releasably connected to the first casing 10. The battery pack 30 includes
an attachment assembly (not shown) for releasably connecting the battery pack 30 to a
complimentary attachment assembly (not shown) on the first casing. The present invention is not
limited to a removable battery pack, other means for providing battery power to the operating
25 assembly are considered to be well within the scope of the present invention. For example, a
removable battery may be located within a cavity within the first casing. The cavity may be covered
using a removable cover assembly.

The second casing 20 is connected to the first casing 10 such that the second casing is
capable of swiveling about an axis between an OFF position, as shown in Fig. 1 and at least one ON
30 position, as shown in Figs. 8 and 9. The second casing 20 includes a transmitter portion 21. The

transmitter portion 21 is electrically connected to the operating assembly such that a user's voice is transmitted through the transmitter portion 21 to the operating assembly for transmission.

Fig. 9 illustrates the telephone 1 in one of several ON positions. In the orientation illustrated in Fig. 9, the telephone 1 may be gripped with the right hand of the user such that the receiver portion 14 is aligned with the user's right ear and the transmitter portion 21 is adjacent the user's mouth. The present invention permits the transmitter portion 21 to be located closer to the user's mouth than conventional handheld telephone, which permits better reception of the user's voice. When the telephone 1 is to be held in the left hand, the second casing 20 is swiveled to the position shown in Fig. 8. In this orientation, the telephone 1 may be gripped with the left hand of the user such that the receiver portion 14 is aligned with the user's left ear and the transmitting portion 21 is located adjacent the user's mouth.

The second casing 20 swivels with respect to the first casing 10 about a pivoting assembly 40. The pivoting assembly 40 secures the first and second casings together. The pivoting assembly 40 further includes a locking assembly such that the second casing 20 may be rotated to and locked in the OFF position, as shown in Fig. 1. Furthermore, the second casing 20 may be rotated to and locked in either of the ON positions depicted in Fig. 8 and 9. The pivoting assembly 40 preferably includes a spring activated push button assembly. Operating the pivoting assembly 40 once causes the second casing 20 to move to the first operating position illustrated in Fig. 9 under the bias of, for example, a spring assembly. The pivoting assembly 40 further includes a locking assembly to maintain the second casing 20 in the fixed location, shown in Fig. 9. The locking assembly may include a detent assembly located on the first and second casings. Operating the pivoting assembly 40 a second time releases the locking assembly, which causes the second casing 20 to move to the second operating position illustrated in Fig. 9. The locking assembly may include a detent assembly located on the first and second casings to hold the second casing 20 in the position shown in Fig. 8. The second casing 20 may be moved to the closed position by again depressing the pivoting assembly 40. Alternatively, the user may simply manually move the second casing 20 with respect to the first casing 10 to any one of the closed and operating positions.

While this invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. For example, other suitable pivoting and locking assemblies may be used. Accordingly, the preferred embodiments of the invention as set forth herein are intended to be illustrative, not

limiting. Various changes may be made without departing from the spirit and scope of the invention as defined in the following claims.

What is claim d is:

1. A compact portable telephone comprising:
a first casing, said first casing has a first horizontal plane extending there through
a second casing, said second casing has a second horizontal plane extending there through,
wherein said first horizontal plane extends parallel to said second horizontal plane; and
pivoting means for pivoting said second casing with respect to said first casing, wherein said
pivoting means pivots said second casing about an axis that is perpendicular to said first horizontal
plane and said second horizontal plane.
2. The compact portable telephone according to Claim 1, wherein said first casing includes
a receiving portion, and an operating assembly for transmitting and receiving telephone signals,
wherein said second casing includes a transmitting portion
3. The compact portable telephone according to Claim 1, wherein said pivoting means pivots
between a closed position and at least one open position.
4. The compact portable telephone according to Claim 3, wherein said second casing
substantially overlies said first casing in said closed position.
5. The compact portable telephone according to Claim 3, wherein said second casing is
pivoted away from said first casing in said at least one open position.
6. The compact portable telephone according to Claim 3, further comprising locking means
for releasably locking said first and second casing in at least one of said closed position and said at
least one open position.
7. The compact portable telephone according to Claim 3, wherein said pivoting means
further includes locking means for releasably locking said first and second casing in at least one of
said closed position and said at least one open position.
8. The compact portable telephone according to Claim 3, wherein said first horizontal plane
includes a first axis therein and said second horizontal plane includes a second axis therein, wherein
said first axis and said second axis are substantially parallel when said first and second casing are
in said closed position, wherein said second axis is disposed at an angle to said first axis when in
said at least one open position.

9. A compact portable telephone comprising:

a first casing;

a receiving portion located in said first casing;

an operating assembly for transmitting and receiving telephone signals, said operating assembly being located with said first casing, wherein said receiving portion broadcasts telephone signals received by said operating assembly;

a second casing connected to said first axis, wherein said second casing swivels about an axis with respect to said first casing; and

a transmitting portion located in said second casing, wherein said transmitting portion receives audio signals from a user, said transmitting portion transfers the audio signals to said control assembly.

10. The compact portable telephone according to Claim 9, wherein said second casing swivels about said axis between a closed position and at least one open position.

11. The compact portable telephone according to Claim 10, wherein said second casing substantially overlies said first casing in said closed position.

12. The compact portable telephone according to Claim 10, wherein said second casing is pivoted away from said first casing in said at least one open position.

13. The compact portable telephone according to Claim 10, further comprising locking means for releasably locking said first and second casing in at least one of said closed position and said at least one open position.

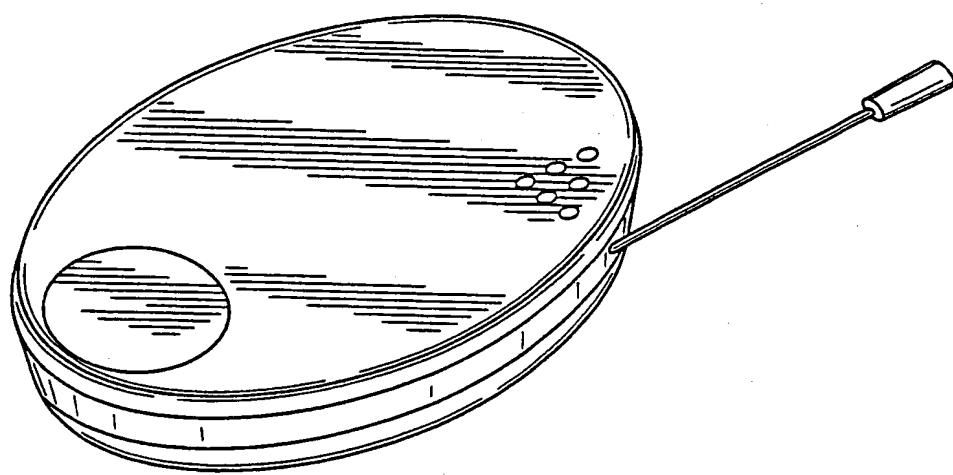


FIG. 1

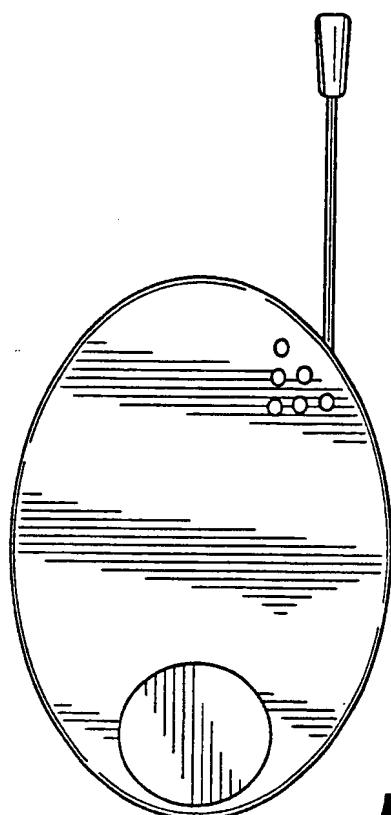


FIG. 2

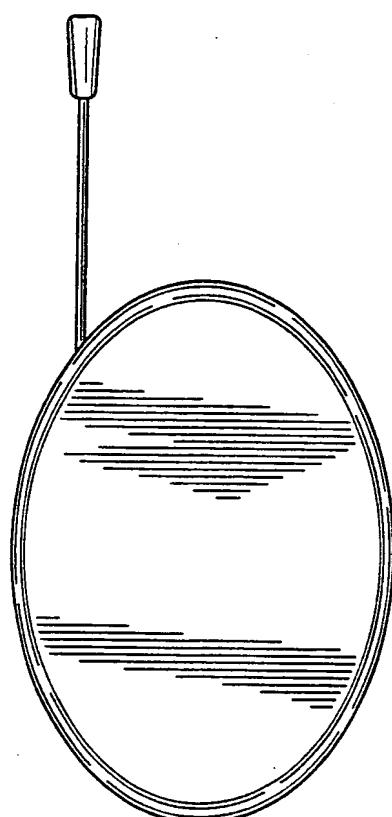


FIG. 3

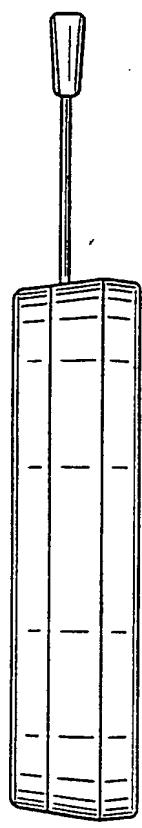


FIG. 4

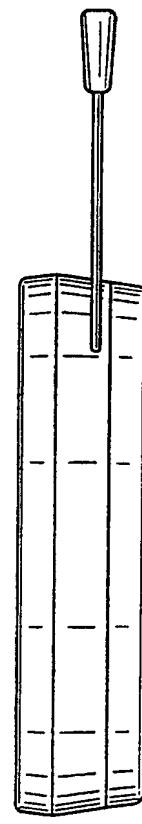


FIG. 5

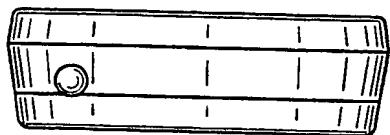


FIG. 6

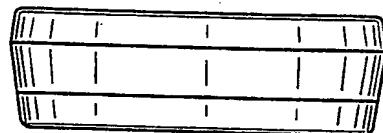


FIG. 7

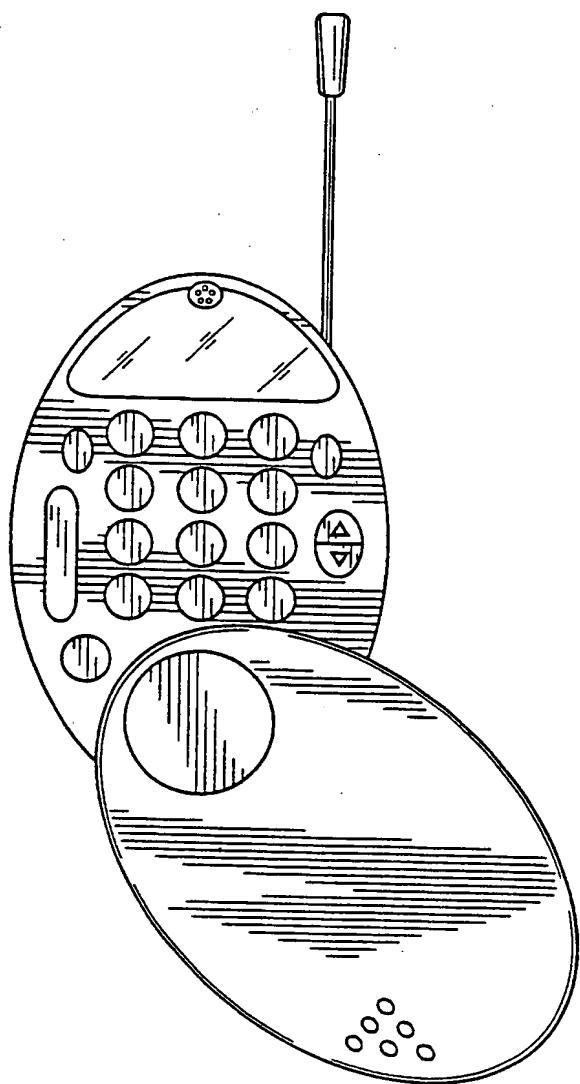


FIG. 8

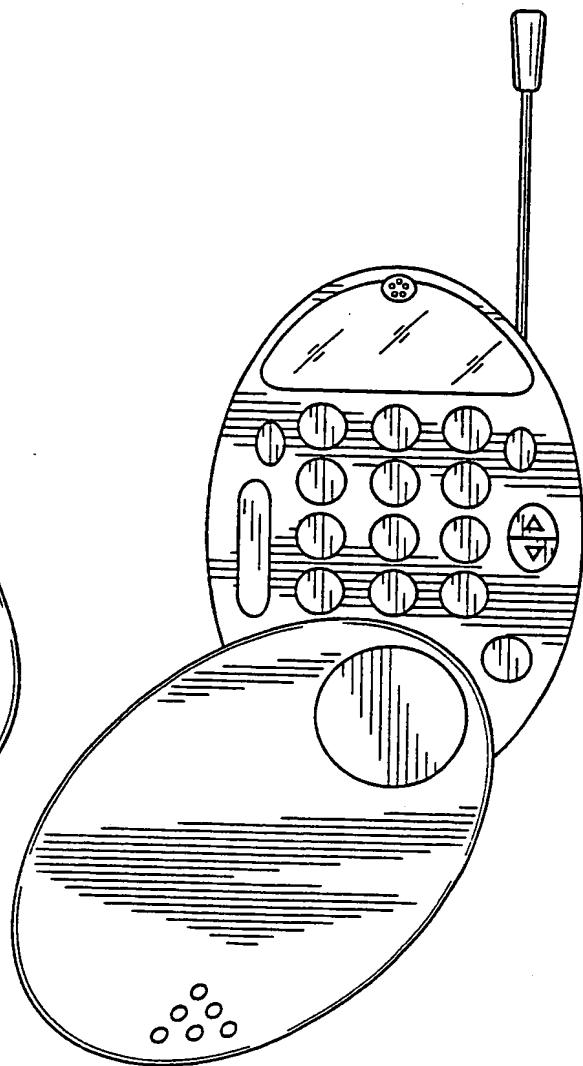


FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/22535

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04B 1/38

US CL : 455/90, 575, 347, 348, 349, 350 ; 379/58, 450

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 455/90, 550, 575, 347, 348, 349, 350 ; 379/58, 450, 441, 446

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WEST; EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 3323858 A1 (BRANDENSTEIN) 03 January 1985, pages 14 - 19	1-13
Y	US 5,517,683 A (COLLETT et al.) 14 May 1996, abstract, col. 2, lines 30- 64; col. 4, line 7- col. 7, line 18	1-13
Y	US 5,151,946 A (MARTENSSON) 29 September 1992, col. 2, lines 1-68; col. 3, line	1-13

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

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